WE CLAIM:

1. A carrier for containing a biomolecular interaction, said carrier comprising inorganic, organic or organic and inorganic material.

2. A carrier containing a biomolecular interaction, said carrier comprising inorganic, organic or organic and inorganic material.

3. A carrier according to claim 2 wherein the biomolecular interaction is incorporated within a matrix of the carrier.

4. A carrier according to claim 1 wherein the carrier comprises a silica based glass.

5. A carrier according to claim 3 wherein the material is a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide or otherwise functionalized metal alkoxide or a corresponding metal chloride, silazane, polyglycerylsilicate or other silicate precursor .

6. A carrier according to claim 5 derived by a sol-gel processing method.

7. A carrier according to claim 6 wherein the bimolecular interaction is bioactive.

8. A carrier according to claim 7 wherein the carrier is bioactive.

9. A carrier according to claim 8 pre-treated to contain components found in an animal fluid.

10. A carrier according to claim 9 wherein the pre-treatment is by immersion in a solution containing components found in an animal fluid for a period of up to about seven days prior to use.

11. A carrier according to claim 10 wherein the animal fluid is interstitial fluid.

12. A carrier according to claim 11 wherein the carrier is synthesized under sterile conditions or sterilized subsequent to synthesis using conventional sterilization methods.

13. A carrier according to claim 12 wherein the carrier provides controlled release of the biologically active biomolecular interaction over time.

14. A method for preparing a carrier having a biomolecular interaction incorporated within the carrier comprising:

(a) reacting a reactant comprising a functionalized metal alkoxide or a corresponding or other silicate precursor with water;

(b) adjusting the pH to a value between 4 and 10 either before or during the addition of an aqueous solution containing a biomolecular interaction to provide a mixture;

(c) casting the mixture;

(d) allowing the mixture to gel and age; and

(e) partially drying the aged gel.

15. A method according to claim 14 wherein the reaction occurs alone or as mixtures of more than one reactant where the reactant is a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide or otherwise functionalized metal alkoxide.

16. A method according to claim 15 wherein the functionalized metal alkoxide is aminopropyl triethoxysilane.

17. A method according to claim 14 wherein the corresponding functionalized metal alkoxide is metal chloride, silazane, or polyglycerylsilicate.

18. A method according to claim 17 wherein the reacting occurs in an acidic or basic aqueous medium.

19. A method according to any one of claims 18 wherein the reactant and water are in a molar ratio of from about 1:1 to about 20:1 water/reactant.

20. A method according to claim 19 wherein the casting of the mixture is in a mold, a column, a microtiter well, a spot on a surface by pin spotting, inkjet deposition or screen printing ; or a film on a surface by dipcasting, spin-casting or spraying,

21. A method according to claim 20 wherein the gel and aging is at temperatures from about 0°C up to about 40°C.

22. A method according to claim 21 wherein the partial drying is at temperatures from about 4° to about 40°C.

23. A method for the preparation of a carrier having a bioactive bimolecular interaction incorporated in the carrier comprising:

(a) incorporating the bioactive biomolecular interaction in the carrier;

(b) hydrolysis and polycondensation of at least one monomer to provide a solid matrix bonding the bioactive biomolecular interaction which is incorporated in the carrier ; and

(c) imparting mechanical, chemical and thermal stability in the matrix.

24. A method according to claim 23 wherein the at least one monomer is a functionalized or non-functionalized alkoxysilane; functionalized or non-functionalized bis-silane; functionalized or non-functionalized chlorosilane; sugar, polymer, polyol or amino acid substituted silicate; or additives selected from any available organic polymer, polyelectrolyte, sugar (natural or synthetic) or amino acids (natural and non-natural).

25. A method according to claim 24 wherein the monomer is based on titanium, vanadium or cerium.

26. A method according to claim 25 wherein mechanical, chemical and thermal stability is imparted by combination of precursors and additives.

27. A method according to claim 25 wherein mechanical, chemical and thermal stability is imparted by choice of aging and drying methods.

28. A method according to claim 25 wherein mechanical, chemical and thermal stability is imparted by combination of precursors and additives, and by choice of aging and drying methods.

29. A method according to claim 28 wherein the carrier comprises a silica based glass.

30. A method according to claim 29 wherein the carrier comprises a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide or otherwise functionalized metal alkoxide or a corresponding metal chloride, silazane, polyglycerylsilicate or other silicate precursor .

31. A method according to claim 29 wherein the carrier is derived by a sol-gel processing method.

32. A method according to claim 31 wherein the carrier is bioactive.

33. A method of treating an animal comprising administering an effective amount of a biologically active biomolecular interaction contained in a carrier such that the animal is thereby treated.

34. A method according to claim 33 wherein the treating is by site-specific targeting in the animal.

35. A method according to claim 34 wherein the effective amount of a biologically active biomolecular interaction is a chemotherapeutic for treating cancer.

36. A method according to claim 35 wherein the carrier is a carrier according to claim 7.

37. A method for screening a compound to determine the degree of inhibition or binding of a biomolecular interaction by the compound comprising contacting the compound to be tested with the molecules of a biomolecular interaction wherein the molecules are incorporated within a carrier and they are capable of forming a biomolecular interaction in the carrier, and wherein inhibition of the formation of the biomolecular interaction or binding by the compound causes a change in the amount of a detectable signal produced by the molecules of the interaction of by one or more labels at or near the site of interaction of the molecules.

38. A method according to claim 37 wherein the biomolecular interaction is incorporated within a matrix of the carrier.

39. A method according to claim 38 wherein the carrier comprises a silica based glass.

40. A method according to claim 39 wherein the carrier is prepared from a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide or otherwise functionalized metal alkoxide or a corresponding metal chloride, silazane, polyglycerylsilicate or other silicate precursor .

41. A method according to claim 40 wherein the carrier is derived by a sol-gel processing method.

42. A method according to claim 41 wherein the bimolecular interaction is bioactive.

43. A method according to claim 42 wherein the carrier is bioactive.

44. A method of high through put screening for a substance which inhibits or binds a bimolecular interaction, comprising the steps of:

(a) incorporating a bimolecular interaction within a carrier;

(b) forming an array of sol-gel derived spots on a support wherein each spot contains a bimolecular interaction;

(c) measuring a original signal from the bimolecular interaction in the absence of any other substances;

(d) reversibly disrupting the bimolecular interaction such that the signal is detectably altered;

(e) adding the substance to the bimolecular interaction in the carrier, and reversing the disruption; and

(f) measuring the signal;

where the original signal is not recovered, the substance is determined to bind or inhibit the bimolecular interaction.

45. A method according to claim 44 wherein the signal is excited by a He-Cd laser through an optical fiber or by a nitrogen laser through a bifurcated optical fiber.

46. A method according to claim 45 wherein the signal is detected through the same fiber

47. A method according to claim 46 wherein the signal is detected in a time-gated or time resolved mode.

48. A method of detecting signals generated by an array according to claim 47 wherein the signal is excited by a laser, lamp or light emitting diode, either directly or through an optical fiber, and fluorescence is detected using a CCD camera.

49. A method of normal or frontal affinity chromatography for pre-screening a substance for binding or inhibiting a bimolecular interaction comprising:

incorporating a biomolecular interaction or individual protein partners within a carrier;

placing said carrier in a column;

adding a denaturant;

passing said substance including an indicator ligand through the column in conjunction with removal of the denaturant; and

determination of retention behaviour by fluorescence or mass spectrometry .

Table 1. Reversibility of disruption for entrapped BCaM:melittin.

	Relative Intensity	Anisotropy	Wavelength Maximum
Native	100	0.129	334 nm
Denatured	40	0.099	346 nm
Recovered	104	0.136	330 nm

TABLE 2

	Anisotropy	Wavelength (nm)
Native	0.129	334
Denatured	0.099	346
Recovered with no TFP	0.136	331
Denatured, TFP added	0.115	346
Recovered with TFP	0.121	346

Table 3. Fluorescence lifetime data for B-CaM:dansyl-Melittin

Sample	f_1	f_2	f_3	τ_1	τ_2	τ_3	$<\tau>$	χ^2
Dan-Mel	0.898	0.102	-	9.898	1.029	-	8.992	1.07
DM:B-CaM (native)	0.535	0.426	0.038	48.05	7.666	1.211	29.03	1.11
DM:B-CaM (recovered with TFP)	0.664	0.336	-	13.57	2.685	-	9.92	1.23

f_i = fractional fluorescence of component i, τ_i = lifetime of component i, $<\tau> = \Sigma f_i\tau_i$

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